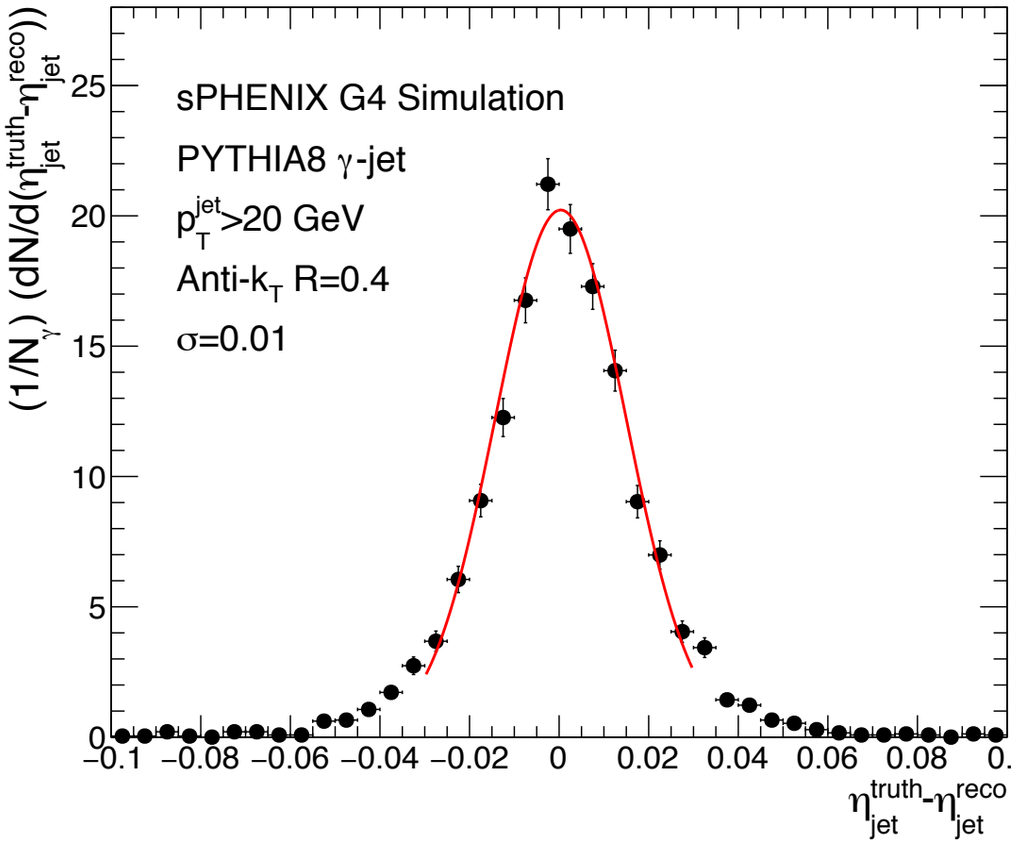
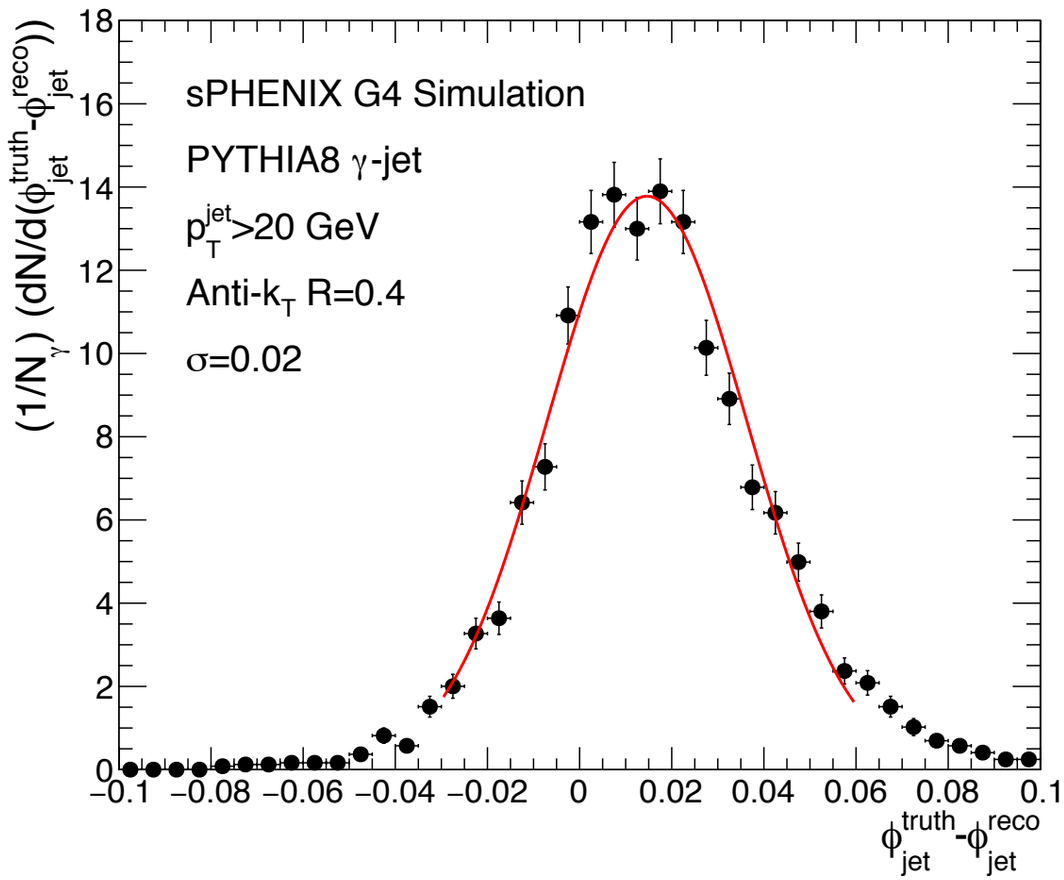
Jet Angular Resolution

Joe Osborn
University of Michigan

Angular Resolution

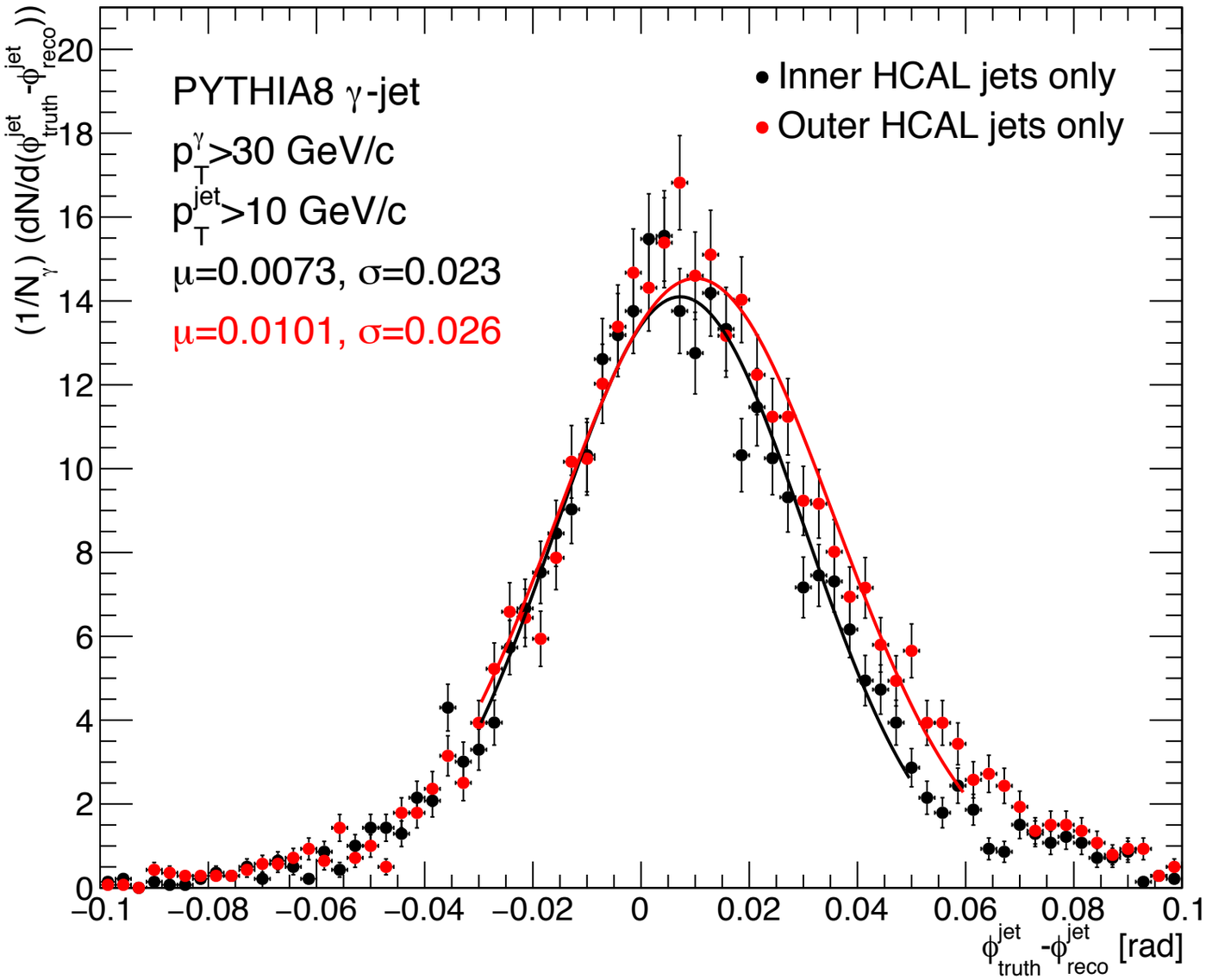




- η resolution ~0.02, centered at 0
- ϕ resolution ~0.02, but offset from 0. μ~0.015

Inner and Outer HCAL Jets

- Suggestion by Jin to do jet finding with only inner or outer HCAL
- Each shows a slight (different) offset
- Note p_T^{jet}>10 GeV here, due to the p_T response being worse



Summary

- Jet η residual shows good behavior with width 0.02 and centered at 0
- Jet azimuthal angle shows offset in residual but good width of 0.02
- Offset likely due to HCAL tower ϕ definition: Right now it is defined as the average of the middle of the first slat at the inner radius to the middle of the last slat at the outer radius
  - Tower segmentation is ~0.1x0.1 in ΔηxΔϕ
- Discussion: What is the best way to fix this?
  - Jin suggested doing a similar study to today for a range of jet characteristics (i.e. large range of p_T, quark vs. gluon jets, others?) and adjusting the default inner/outer HCAL geometry by the offset

Extras

- p_T response with only inner HCAL shows significantly worse resolution, mean